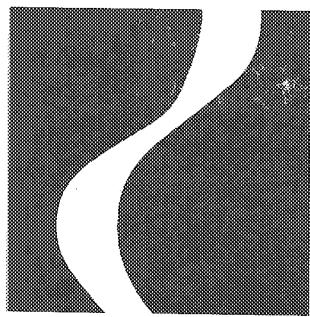


## **EXHIBIT B**



# Academic Press Dictionary of Science and Technology

Edited by  
Christopher Morris



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**developmental biology****Developmental Biology**

This term has gained usage in the past 30 years for the study of the development of multicellular differentiated organisms. It overlaps the older term "embryology" (the study of embryos, starting in the 1880s).

During development, precise arrangements of different cell types arise from the relatively simple organization of the single-celled egg. In mammals, for example, at least 200 cell types (those of muscle, nerve, skin, etc.) are arranged in tissues and organs of the adult. These cell types differ in appearance and function, due largely to different proteins each synthesizes and maintains. While the various cell types usually contain the same genes, which are unchanged from those of the fertilized egg, the cell types differ in which subset of genes is used for making proteins.

As recognized by T.H. Morgan in the 1930s, development depends largely on the timely formation and specific placement of factors (RNA and proteins) that ultimately activate the use of different genes in different cell types. Two kinds of processes for forming and distributing these factors are now known: 1) Cytoplasmic localization: the oocyte (the egg precursor) and/or egg synthesizes and localizes different factors to different regions of the egg's cytoplasm, and these pass into embryonic cells divided from the egg. This process underlies the establishment of the first few regions of differing cells in the early embryo. 2) Embryonic induction: identical embryonic cells of a region form inactive factors, after which a subset of cells receives signals ("inducers") from nearby different cells and activates the factors for use. This process underlies the detailed placement of the final cell types.

Recent research, especially on the fruit fly *Drosophila*, has led to the identification of some of these factors and the genes they affect. Much work remains to be done on the intercellular signalling of induction, on the intracellular localization of materials in the egg, and on the regulatory processes by which embryos restore normal development after a loss of parts.

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**developmental biology** the study of the development of organisms.

**developmental crisis** *Psychology*. 1. a brief period of stress in childhood during which the child is attempting to complete some psychosocial task, such as the establishment of identity or initiative. 2. see DEVELOPMENTAL DISORDER.

**developmental disorder** *Psychology*. a delay or failure in the development of a specific ability or function, such as speech, reading, mathematical skill, and so on.

**developmental genetics** *Genetics*. the field of genetics that studies the relationship of hereditary patterns to embryology and the development of organisms.

**developmental level** *Psychology*. any period of the human life span recognized as distinct in physiological and psychological development, such as infancy, early childhood, adolescence, and so on.

**developmental psychology** *Psychology*. a branch of psychology concerned with physical, social, and cognitive growth and decline from birth to death. Thus, **developmental psychologist**.

**developmental stage** *Psychology*. 1. a period in human life during which certain characteristic traits or behaviors become manifested. 2. see DEVELOPMENTAL LEVEL.

**development drift** *Mining Engineering*. the tunnel of a mine dug from the surface or a point underground to gain access to the coal or ore.

**device independence** *Computer Technology*. the attribute of a program for which successful execution does not depend on a particular type of physical device.

**development drilling** *Mining Engineering*. the process of drilling boreholes to delineate the size, mineral content, and disposition of an ore body.

**development environment** *Computer Technology*. a computer system used for software development that includes aids such as compilers, debuggers, syntax checkers, and other hardware and software tools.

**development index** *Meteorology*. the difference in divergence between two separated, tropospheric, constant-pressure surfaces; used in forecasting cyclogenesis. Also, RELATIVE DIVERGENCE.

**development rock** *Mining Engineering*. any rock broken during development work, consisting of both valuable and barren rock, which is included in the tonnage sent to the reduction plant of a mine.

**development system** *Computer Technology*. a computer system with hardware and software that supports efficient development of applications for a particular computer; often includes design and debugging aids, emulators, editors, assemblers, and compilers.

**development well** *Petroleum Engineering*. a well that is drilled within the productive area as determined by appraisal wells, after proving that enough oil or gas exists for commercial production.

**deviant** *Psychology*. 1. of or relating to behavior that differs sharply from what is regarded as normal, proper, or acceptable, especially in sexual conduct. 2. a person characterized by deviant behavior. Also, DEVIATE.

**deviate** *Psychology*. 1. to behave in a deviant manner. 2. see DEVIANTE.

**deviation** the process of departing or turning aside, as from a course, procedure, or norm; specific uses include: *Engineering*. the difference between the measured value and the expected value of a controlled variable. *Optics*. the angle that separates the incident ray striking an object or optical system from the emergent ray produced by reflection, refraction, or diffraction. *Psychology*. the fact or condition of being deviant in behavior. *Navigation*. the angular difference between magnetic and compass headings. *Statistics*. the distance of a measurement from the mean of the sample or the underlying population. *Ordnance*. the distance between the point of impact or burst and the target.

**deviation absorption** *Telecommunications*. distortion in a frequency-modular receiver, usually occurring as a result of inadequate amplitude-modulation rejection.

**deviation factor** see COMPRESSIBILITY FACTOR.

**deviation hole** *Petroleum Engineering*. a drilled hole that intentionally deviates from the true vertical, but by no more than 5%.

**deviation IQ** *Psychology*. a score on an IQ test expressed in terms of its variation from the average of the scores of the normative group.

**deviation ratio** *Telecommunications*. in a frequency modulation signal system, the ratio of the maximum frequency deviation to the maximum modulation frequency under given conditions.

**deviation sensitivity** *Navigation*. the sensitivity of a compass to deviation errors.

**deviation table** *Navigation*. a table of the deviations of a particular compass on a particular craft. Also, **deviation card**.

**deiatoric stress** *Mechanics*. the remaining stress when the spherical or mean normal stress is subtracted from the total stress.

**device** *Engineering*. any element, tool, or component designed for a specific use or purpose. *Electronics*. a discrete electronic element, usually an active element, such as an electron tube or diode, that cannot be divided without destroying its specific function.

**device address** *Computer Programming*. the binary value that identifies the desired device to the input/output controller.

**device assignment** *Computer Technology*. 1. the selection of a particular input or output device by specifying its logical device number. 2. an assignment of a device, such as a tape drive, to a particular program by the operating system.

**device cluster** *Computer Technology*. a group of terminals and other devices that are co-located and share a communication control unit.

**device control character** *Computer Technology*. a special character used to turn units on and off or to perform a specific function; often used in telecommunications.

**device driver** *Computer Programming*. software that interfaces with and controls the operation of an input or output unit.

**device-end condition** *Computer Technology*. the completion of an input or output operation, as sensed by the input/output controller.

**device flag** *Computer Technology*. a single-bit register that indicates the status of a particular device.

**device independence** *Computer Technology*. the attribute of a program for which successful execution does not depend on a particular type of physical device.

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